



PRODUCT / PROCESS CHANGE NOTIFICATION

PCN-000826

Date: FEB-03-2023

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Semtech Corporation, 200 Flynn Road, Camarillo CA 93012

Change Details

Part Number(s) Affected:

1	GS1660AIBE3	10	GS2960-IBE3
2	GS1660-IBE3	11	GS2960-IBTE3
3	GS1660-IBTE3	12	GS2962-IBE3
4	GS1670AIBE3	13	GS2962-IBTE3
5	GS1670-IBE3	14	GS2970AIBE3
6	GS1670-IBTE3	15	GS2970AIBTE3
7	GS1672-IBE3	16	GS2970-IBE3
8	GS2960AIBE3	17	GS2972-IBE3
9	GS2960AIBTE3	18	GS2972-IBTE3

Customer Part Number(s) Affected: N/A

Description, Purpose and Effect of Change:

PROCESS UPDATE:

Semtech has qualified its tier 2 supplier to change the substrate's Ni/Au plating process from TSG (Traditional Selective Gold) to DPS (Double Pattern Sputter).

The TSG machine has been phased out as of September 2022, so this change is required to ensure continuous supply of the affected part numbers listed above.

Change Classification	<input type="checkbox"/> Major <input checked="" type="checkbox"/> Minor	Impact to Form, Fit, Function	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Impact to Data Sheet	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	New Revision or Date	<input checked="" type="checkbox"/> N/A

Impact to Performance, Characteristics or Reliability:

There is no impact to form, fit, function, performance, characteristics, or reliability.

Implementation Date	AUG-03-2023	Work Week	31
Last Time Ship (LTS) Of unchanged product	N/A	Affecting Lot No. / Serial No. (SN)	N/A
Sample Availability	DEC-31-2022 GS2972-IBE3	Qualification Report Availability	N/A

Supporting Documents for Change Validation/Attachments:

- PRODDOC028024 Reliability Qualification Report

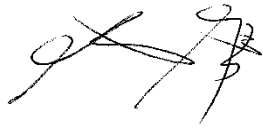


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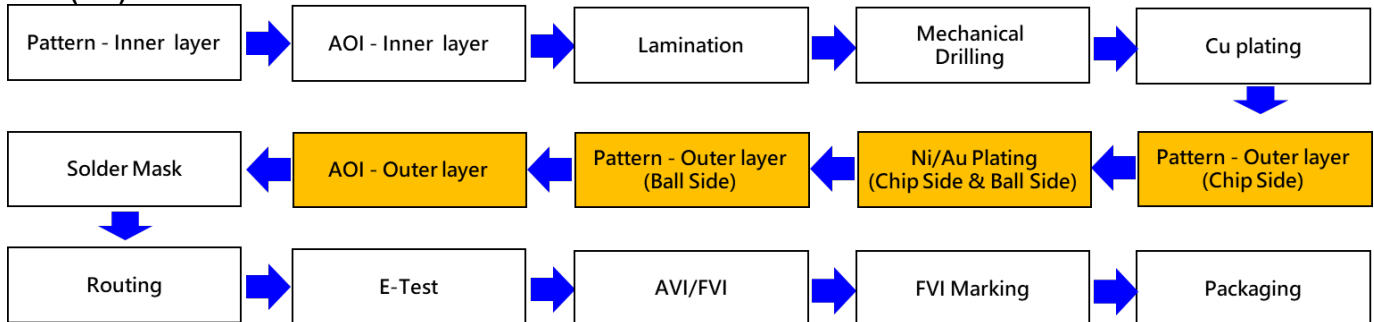
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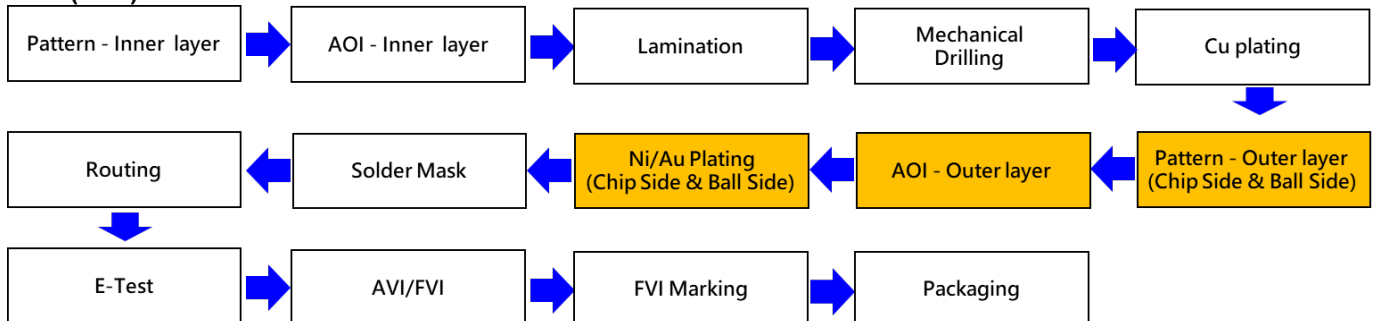
Issuing Authority	
Semtech Business Unit:	Signal Integrity Product Group (SIP)
Semtech Contact Info:	Pedro Jr. Bernas pbernas@semtech.com (289) 856-9326 x1162 
FOR FURTHER INFORMATION & WORLDWIDE SALES COVERAGE: http://www.semtech.com/contact/index.html#support	

- **Process Flow Comparison**

TSG (old)



DPS (new)



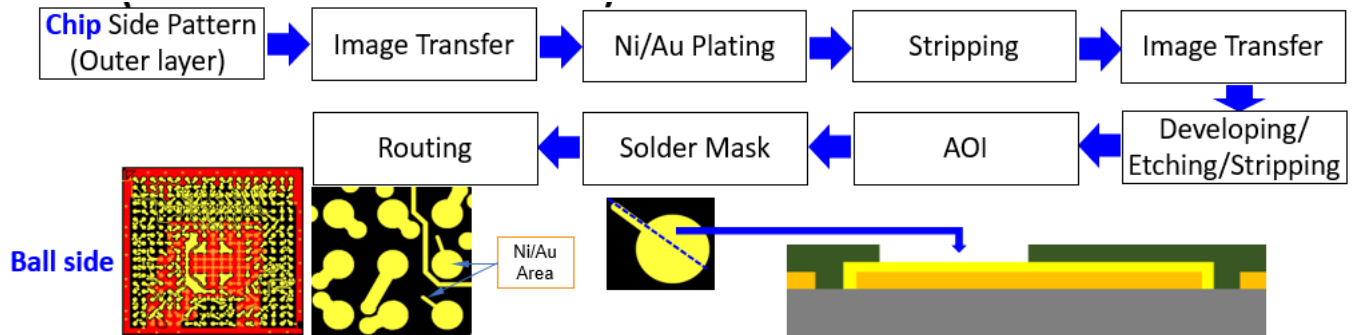
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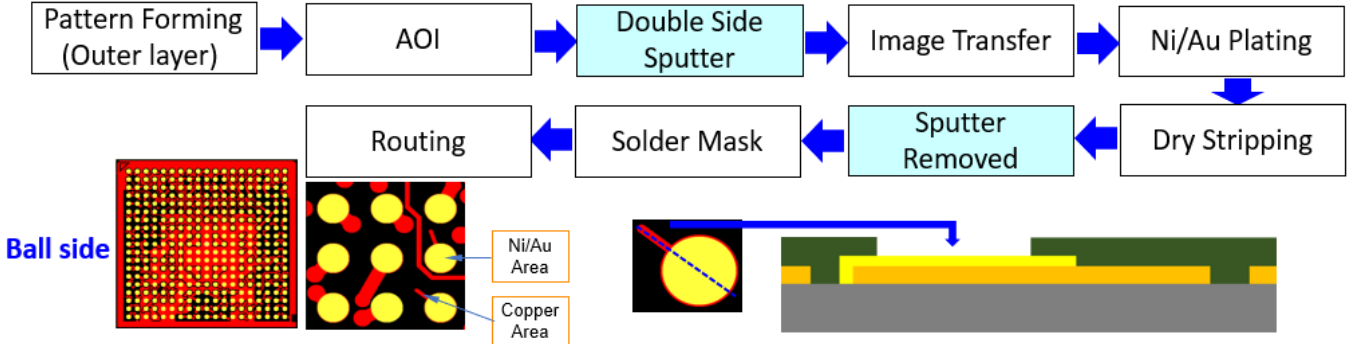
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TSG (old)



The trace & ball pad of ball side with Ni/Au plating.

DPS (new)



Only ball pad of ball side with Ni/Au plating.



SEMTECH

Reliability Qualification Report for Substrate Process Change at ASEK

Revision History

Version	ECO	Date	Modifications
0	ECO-065182	Jan 2023	New Release

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1 Background

More than 15 Semtech products are currently manufactured at ASEK and uses substrate supplied by ASEE. ASEE will soon phase out the existing substrate process (Traditional selective gold, or TSG) and will substitute with a new Double Pattern Sputter (or known as DPS) process. The purpose of this qualification is to qualify substrate from this new DPS process to be used in Semtech's products.

2 Product Scope

A total of 18 products will be affected by this process change. The products affected, and their package type, are listed in table 1

Table 1: all products covered in this qualification and their package type

Finish Goods	Product	Package type	Qualification Vehicle
GS2972-IBES	GS2972	11x11 100-ball LBGA	GS2972
GS2972-IBTE3			
GS2962-IBE3	GS2962		
GS2962-IBTE3			
GS1672-IBE3	GS1672		
GS2960AIBE3	GS2960		
GS2960AIBTE3			
GS2960-IBE3			
GS2960-IBTES			
GS2970AIBE3	GS2970		
GS2970AIBTE3			
GS2970-IBE3			
GS1660AIBES	GS1660		
GS1660-IBE3			
GS1660-IBTE3			
GS1670AIBE3	GS1670		
GS1670-IBE3			
GS1670-IBTE3			

3 Qualification Approach

All products listed in table 1 have already been fully qualified previously (see table 2 for product document number of each qualification report). Out of the 18 affected finish goods, GS2972 was selected as qualification vehicle based on its sales volume and the sample availability. This qualification only intends to assess the reliability impact of SDP processed substrate from ASEE at ASEK. Thus, die-level reliability stresses (HTOL, ESD and LU) were not planned. TC, UHAST and HTS were carried out on at least 1 lot. CSAM was performed on all parts from each lot and stresses at T0, post MSL (if applicable) and post stresses. For more information about the conditions of the qualification stresses and sample size, please refer to table 3 in section 4.

Table 2: product document number of qualification reports for all product affected by this process change.

Product	Qualification Report
GS2972	GENDOC-051279
GS2962	GENDOC-051284
GS1672	GENDOC-053705
GS2960	GENDOC-051422
GS2970	GENDOC-051421
GS1660	GENDOC-053704
GS1670	GENDOC-053703

4 Reliability Qualification Stresses

Table 3: Reliability qualification stresses for GS2972 with DPS substrate

Stress Test	Conditions	Duration	Qualification Vehicle	Sample Size	Result
High Temperature Storage (HTS)	JESD22-A103	1000 hours	GS2972	80 pcs x 3 lots	Pass
	CSAM T=150°C				
UFAST	JESD22-A118	96hrs	GS2972	80 pcs x 3 lots	Pass
	MSL3 preconditioning and CSAM 130°C, 85 % RH,				
TC	JESD22-A104	850 cycles	GS2972	80 pcs x 1 lots	Pass
	MSL3 preconditioning and CSAM -40°C to +125°C (Condition G)				

5 Conclusion

In conclusion, GS2972 with DPS processed substrate from ASEE successfully passed required reliability stresses. Thus, DPS processed substrate can be considered as a qualified to be used in Semtech's product at ASEK.